CP/TF/01

TEST REPORT OF PHYSICAL PROPERTIES OF CEMENT - 53 Grade

Lab ID	:	**CP-2017-07-04-05** **Date: 06-07-17**
Customer	:	Assistant Executive Engineer, Vidyaranyaura Sub division, BBMP, Bangalore.
Address	:	Vidyaranyaura Sub division, BBMP, Bangalore.
Project Name	:	Improvements to road and drain and asphalting to Varadarajanagar main road in Ward no.11 (Kuvempunagara), in Vidyaranyapura Sub division.
Agency	:	Sri. T.N. Umashankar, No.9/2, 2nd cross , Papanna Block, Ganganagara, Bangalore-560032.
Customer's Reference	:	BBMP/EE/BTP/WO/88/2017-18
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	04-07-17
Sample ID No	:	2017-07-04-05/01
Sample Type	:	Birla Super 53grade
Reference to BIS codes	:	IS 12269 : 2013, 53 Grade Ordinary Portland cement Specification , IS 4031 (Part 1,2 3,4,5, 6,11):1988 IS 4031 Part 1 DETERMINATION OF FINENESS BY DRY SIEVING, Clause 4.4 IS 4031 Part 2, Determination of Fineness by Blaine Air Permeability Method, Clause 5 IS 4031 Part 3, Determination of Soundness, Clause 5,Clause 6 IS 4031 Part 4, Determination of Consistency of Standard Cement Paste, Clause 5 IS 4031 Part 5, Determination of Initial & Final Setting Time, Clause 5 IS 4031 Part 11,DETERMINATION OF DENSITY , Clause 6
Date of test	:	05-07-17

Sl.No.	Physical properties	Results	Requirement as per IS 12269: 2013
1	Fineness by dry sieving (%)	2.75	–
2	Finess by Air permeablity method (m^2/kg, Min)	279.5	225m^2/kg, Min
3	Density (gm/cc)	3.25	–
4	Standard Consistency (%)	29.0%	Not specified
5	Initial Setting time	175 minutes	Not less than 30 minutes
6	Final Setting time	275 minutes	Not more than 600 minutes
7	Soundness (Le Chatelier's Method)	2mm	Not more than 10 mm

Note:

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All information furnished by Customer/Representative

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CP/TF/01

TEST REPORT OF PHYSICAL PROPERTIES OF CEMENT - 53 Grade

Lab ID	:	**CP-2017-07-04-05** **Date: 02-08-17**
Customer	:	Assistant Executive Engineer, Vidyaranyaura Sub division, BBMP, Bangalore.
Address	:	Vidyaranyaura Sub division, BBMP, Bangalore.
Project Name	:	Improvements to road and drain and asphalting to Varadarajanagar main road in Ward no.11 (Kuvempunagara), in Vidyaranyapura Sub division.
Agency	:	Sri. T.N. Umashankar, No.9/2, 2nd cross , Papanna Block, Ganganagara, Bangalore-560032.
Customer's Reference	:	BBMP/EE/BTP/WO/88/2017-18
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	04-07-17
Sample ID No	:	2017-07-04-05/01
Sample Type	:	Birla Super 53grade
Reference to BIS codes	:	IS 12269 : 2013, 53 Grade Ordinary Portland cement Specification , IS 4031 Part 4, Determination of Consistency of Standard Cement Paste, Clause 5 IS 4031 Part 6, Determination of Compressive Strength, Clause 6
Date of test	:	05-07-17

Compressive Strength

Sl.No.	Physical properties	Results	Requirement as per IS 12269: 2013
1	3 Days	28.5N/mm^2	Not less than 27 N/mm^2
2	7 Days	40.0N/mm^2	Not less than 37 N/mm^2
3	28 Days	54.5N/mm^2	Not less than 53 N/mm^2

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CP/TF/01

TEST REPORT ON COARSE AGGREGATES

Lab ID	:	**CP-2017-07-04-05** **Date: 07-07-17**
Customer	:	Assistant Executive Engineer, Vidyaranyaura Sub division, BBMP, Bangalore.
Address	:	Vidyaranyaura Sub division, BBMP, Bangalore.
Project Name	:	Improvements to road and drain and asphalting to Varadarajanagar main road in Ward no.11 (Kuvempunagara), in Vidyaranyapura Sub division.
Agency	:	Sri. T.N. Umashankar, No.9/2, 2nd cross , Papanna Block, Ganganagara, Bangalore-560032.
Customer's Reference	:	BBMP/EE/BTP/WO/88/2017-18
Source of Sample	:	Sample supplied by Agency
Sample condition	:	Satisfactory
Date of Receipt	:	04-07-17
Sample ID No	:	2017-07-04-05/02(a)
Sample Type	:	40mm down size coarse aggregate
Reference to BIS codes	:	IS: 383:2016 (Specification for Coarse and fine Aggregates) IS: 2386 :1963(Part - 1,3,4) RA2011 IS 2386 Part 1: Particle Size and Shape IS 2386 Part 3: Specific gravity, Density, Voids,Water Absorption IS 2386 Part 4: Mechanical Properties
Date of test	:	04-07-17

SIEVE ANALYSIS (PARTICLE SIZE DISTRIBUTION) OF 40MM DOWN COARSE AGGREGATE:

Total weight taken : 15000 grams

Sample No.	Sieve No.	Weight Retained in gms	Cumulative Weight Retained in gms	% Cumulative Weight Retained	% Passing	Required as per IS 383:2016
1	80 mm	0	0	0.0	100	100
2	40 mm	342	342	2.3	97.7	90-100
3	20 mm	5780	6122	40.8	59.2	30-70
4	10 mm	4253	10375	69.2	30.8	10-35
5	4.75 mm	4222	14597	97.3	2.7	0-5
6	Pan	403	15000	100.0	0	---

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TEST REPORT ON COARSE AGGREGATES

Lab ID : **CP-2017-07-04-05** **Date: 07-07-17**

Sample ID No : 2017-07-04-05/02(a)

PHYSICAL PROPERTIES

Sl.no	Tests	Result	Requirements as per IS:383-2016
1	Flakiness Index(%)	12.6	Combined Flakiness & Elongation Index Shall not Exceed 40% for Uncrushed & Crushed Aggregate
2	Elongation Index(%)	11.5	
3	Specific Gravity	2.69	–
4	Bulk Density(Loose) (Kg/l)	1.57	–
5	Bulk Density(Compacted) (Kg/l)	1.61	–
6	Water Absorption(%)	0.22	–

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CP/TF/01

TEST REPORT OF FINE AGGREGATE

Lab ID : **CP-2017-07-04-05** **Date: 07-07-17**

Customer : Assistant Executive Engineer, Vidyaranyaura Sub division, BBMP, Bangalore.

Address : Vidyaranyaura Sub division, BBMP, Bangalore.

Project Name : Improvements to road and drain and asphalting to Varadarajanagar main road in Ward no.11 (Kuvempunagara), in Vidyaranyapura Sub division.

Agency : Sri. T.N. Umashankar, No.9/2, 2nd cross , Papanna Block, Ganganagara, Bangalore-560032.

Customer's Reference : BBMP/EE/BTP/WO/88/2017-18

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 04-07-17

Sample ID No : 2017-07-04-05/03

Sample Type : Fine Aggregate

Reference to BIS codes : IS 383 : 2016 (Specification for Coarse and fine Aggregates)
IS: 2386 :1963(Part - 1, 3) RA2012
IS 2386 Part 1: Particle Size and Shape
IS 2386 Part 3: Specific gravity, Density, Voids,Water Absorption

Date of test : 04-07-17

Total weight taken : 1000 grams

Sl.no	Sieve Size	Weight Retained (gms)	Cumulative Weight Retained (gms)	% Cumulative Weight Retained	% Passing	Requirement as per IS 383:2016			
						Grading Zone I	Grading Zone II	Grading Zone III	Grading Zone IV
1	10 mm	0	0	0.0	100.0	100	100	100	100
2	4.75 mm	80	80	8.0	92.0	90-100	90-100	90-100	95-100
3	2.36 mm	134	214	21.4	78.6	60-95	75-100	85-100	95-100
4	1.18 mm	196	410	41.0	59.0	30-70	55-90	75-100	90-100
5	600 micron	187	597	59.7	40.3	15-34	35-59	60-79	80-100
6	300 micron	177	774	77.4	22.6	5-20	8-30	12-40	15-50
7	150 micron	165	939	93.9	6.1	0-10	0-10	0-10	0-15
8	Pan	61	1000	100.0	0.0	---	---	---	---
Result :The tested Sample Conforms to Grading Zone II									

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TEST REPORT OF FINE AGGREGATE

Lab ID : **CP-2017-07-04-05** **Date: 07-07-17**

Sample ID No : 2017-07-04-05/03

PHYSICAL PROPERTIES

Sl.no	Tests	Result	Requirements as per IS 383:2016
1	Water Absorption(%)	1.85	–
2	Specific Gravity	2.56	–
3	Material finer than 75 micron(%)	4.8	Uncrushed fine Aggregate Max 3%, Crushed Fine aggregate Max 15%, Mixed Fine aggregate Max 12%, Manufactured Fine aggregate Max 10%

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CP/TF/01

TEST REPORT ON PHYSICAL REQUIREMENTS OF SOLID CONCRETE BLOCKS

Lab ID	:	**CP-2017-07-18-06** **Date: 21-07-17**
Customer	:	Assistant Executive Engineer, Vidyaranyaura Sub division, BBMP, Bangalore.
Address	:	Vidyaranyaura Sub division, BBMP, Bangalore.
Project Name	:	Improvements to road and drain and asphalting to Varadarajanagar main road in Ward no.11 (Kuvempunagara), in Vidyaranyapura Sub division.
Agency	:	Sri. T.N. Umashankar, No.9/2, 2nd cross , Papanna Block, Ganganagara, Bangalore-560032.
Customer's Reference	:	BBMP/EE/BTP/WO/88/2017-18
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	18-07-17
Sample ID No	:	2017-07-18-06/01
Sample Type/Size	:	Solid concrete blocks of size (400X200X100)mm
Reference to BIS codes	:	IS : 2185 (Part 1) : 2005(RA 2010) Concrete Masonry Specification Part 1:Hollow and Solid Concrete Blocks (Dimensions -Annex-B, Clause 9.2 and 10 , Block density Annex -C Clause 9.3 and10, Compressive strength Annex -D Clause 9.4 and 10, Water absorption Annex -E Clause 9.5 and 10)
Date of test	:	18-07-17

BLOCK DENSITY:

Sl. No.	Measurement of overall Dimensions of Individual Blocks			Overall Volume of the Block in Cubic Centimetres	Weight of Oven Dried Block in Kilograms to the nearest 10 Gram	Block Density in Kg/cum*10^6	Avg.Block Density in (Kg/cum)	As per IS 2185 (Part 1):2005 (RA 2010)
	Length	Breadth	Height					
	mm	mm	mm	(Cm^3)	Kg	Kg/m^3	Kg/m^3	
1	401	200	100	8020	16.320	2034.9	2025.9	Not less than 1800Kg/m^3
2	400	201	101	8120	16.650	2050.4		
3	401	201	102	8221	16.380	1992.4		

WATER ABSORPTION:

Sl. No.	Wet weight after water absorption	Dry weight (Oven dry)	Water Absorption	Avg.Water Absorption	As per IS 2185 (Part 1):2005 (RA 2010)
	kg	kg	%	%	
1	18.160	16.870	7.65	7.17	Shall not be more than 10% by mass
2	18.120	16.930	7.03		
3	18.780	17.580	6.83		

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Lab ID : **CP-2017-07-18-06** **Date: 21-07-17**

Sample ID No : **2017-07-18-06/01**

DIMENSION ANALYSIS

Sl.no	Length mm	Breadth mm	Height mm	Requirement as per IS 2185(Part 1):2005
1	401	202	101	Length : ± 5mm Breadth : ± 3mm Height : ± 3mm
2	404	201	102	
3	403	200	100	
4	402	201	103	
5	403	201	102	
6	402	200	102	
7	401	201	100	
8	404	203	103	
9	401	200	101	
10	402	202	102	
11	401	202	100	
12	400	201	102	
13	401	203	102	
14	402	200	103	
15	400	201	101	
16	400	202	101	
17	401	203	100	
18	402	200	103	
19	403	202	102	
20	402	201	101	
Average of 20	**402**	**201**	**102**	

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Lab ID : **CP-2017-07-18-06** **Date: 21-07-17**

Sample ID No : 2017-07-18-06/01

COMPRESSIVE STRENGTH:

Sl. No.	Size of solid block		Area	Failure Load	Compressive strength	Average Compressive strength
	Length	Breadth				
	mm	mm	(mm^2)	(KN)	N/mm^2	(N/mm^2)
1	401	202	81002	387.7	4.8	4.4
2	404	201	81204	368.8	4.5	
3	403	200	80600	355.4	4.4	
4	402	201	80802	344.9	4.3	
5	403	201	81003	332.6	4.1	
6	402	200	80400	322.4	4.0	
7	401	201	80601	387.9	4.8	
8	404	203	82012	340.4	4.2	

As per IS Requirements (Table 2, Clause 5.1, 5.2 and 9.4)

Compressive strength		
Grade	Minimum average	Minimum Individual units.
C (5.0)	5.00 N/mm^2	4.00 N/mm^2
C (4.0)	4.00 N/mm^2	3.20 N/mm^2

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TEST REPORT ON PHYSICAL REQUIREMENTS OF SOLID CONCRETE BLOCKS

Lab ID	:	**CP-2017-07-18-06** **Date: 21-07-17**
Customer	:	Assistant Executive Engineer, Vidyaranyaura Sub division, BBMP, Bangalore.
Address	:	Vidyaranyaura Sub division, BBMP, Bangalore.
Project Name	:	Improvements to road and drain and asphalting to Varadarajanagar main road in Ward no.11 (Kuvempunagara), in Vidyaranyapura Sub division.
Agency	:	Sri. T.N. Umashankar, No.9/2, 2nd cross , Papanna Block, Ganganagara, Bangalore-560032.
Customer's Reference	:	BBMP/EE/BTP/WO/88/2017-18
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	18-07-17
Sample ID No	:	2017-07-18-06/02
Sample Type/Size	:	Solid concrete blocks of size (400X200X200)mm
Reference to BIS codes	:	IS : 2185 (Part 1) : 2005(RA 2010) Concrete Masonry Specification Part 1:Hollow and Solid Concrete Blocks (Dimensions -Annex-B, Clause 9.2 and 10 , Block density Annex - C Clause 9.3 and10, Compressive strength Annex -D Clause 9.4 and 10, Water absorption Annex -E Clause 9.5 and 10)
Date of test	:	18-07-17

BLOCK DENSITY:

Sl. No.	Measurement of overall Dimensions of Individual Blocks			Overall Volume of the Block in Cubic Centimetres	Weight of Oven Dried Block in Kilograms to the nearest 10 Gram	Block Density in Kg/cum*10^6	Avg.Block Density in (Kg/cum)	As per IS 2185 (Part 1):2005 (RA 2010)
	Length	Breadth	Height					
	mm	mm	mm	(Cm^3)	Kg	Kg/m^3	Kg/m^3	
1	402	202	201	16322	32.350	1982.0	2017.3	Not less than 1800Kg/m^3
2	400	200	202	16160	32.650	2020.4		
3	402	201	200	16160	33.120	2049.5		

WATER ABSORPTION:

Sl. No.	Wet weight after water absorption	Dry weight (Oven dry)	Water Absorption	Avg.Water Absorption	As per IS 2185 (Part 1):2005 (RA 2010)
	kg	kg	%	%	
1	34.750	32.680	6.33	6.76	Shall not be more than 10% by mass
2	34.640	32.370	7.01		
3	35.120	32.840	6.94		

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Lab ID : **CP-2017-07-18-06** **Date: 21-07-17**

Sample ID No : **2017-07-18-06/02**

DIMENSION ANALYSIS

Sl.no	Length mm	Breadth mm	Height mm	Requirement as per IS 2185(Part 1):2005
1	401	200	200	Length : ± 5mm Breadth : ± 3mm Height : ± 3mm
2	400	201	201	
3	403	202	202	
4	402	202	203	
5	401	200	203	
6	401	201	201	
7	400	201	200	
8	402	200	203	
9	401	203	201	
10	401	202	200	
11	400	201	201	
12	401	203	202	
13	402	202	203	
14	400	203	202	
15	402	201	201	
16	401	202	200	
17	401	201	203	
18	402	200	202	
19	403	200	200	
20	401	201	201	
Average of 20	**401**	**201**	**201**	

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Lab ID : **CP-2017-07-18-06** **Date: 21-07-17**

Sample ID No : 2017-07-18-06/02

COMPRESSIVE STRENGTH:

Sl. No.	Size of solid block		Area	Failure Load	Compressive strength	Average Compressive strength
	Length	Breadth				
	mm	mm	(mm^2)	(KN)	N/mm^2	(N/mm^2)
1	401	200	80200	402.9	5.0	5.0
2	400	201	80400	403.1	5.0	
3	403	202	81406	402.7	4.9	
4	402	202	81204	402.5	5.0	
5	401	200	80200	401.8	5.0	
6	401	201	80601	405.9	5.0	
7	400	201	80400	411.5	5.1	
8	402	200	80400	413.4	5.1	

As per IS Requirements (Table 2, Clause 5.1, 5.2 and 9.4)

Compressive strength		
Grade	Minimum average	Minimum Individual units.
C (5.0)	5.00 N/mm^2	4.00 N/mm^2
C (4.0)	4.00 N/mm^2	3.20 N/mm^2

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Quality Manager

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CP/TF/01

TEST REPORT ON BITUMEN

Lab ID	:	**CP-2017-08-24-05** **Date: 06-07-17**
Customer	:	Assistant Executive Engineer, Vidyaranyaura Sub division, BBMP, Bangalore
Address	:	Vidyaranyaura Sub division, BBMP, Bangalore
Project Name	:	Improvements to road and drain and asphalting to Varadarajanagar main road in Ward no.11 (Kuvempunagara), in Vidyaranyapura Sub division.
Agency	:	Sri. T.N. Umashankar, No.9/2, 2nd cross , Papanna Block, Ganganagara, Bangalore-560032.
Customer's Reference	:	BBMP/EE/BTP/WO/88/2017-18
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	24-08-17
Sample ID No	:	2017-08-24-05/01
Sample Type	:	Bitumen
Reference to BIS codes	:	IS: 1201-1220(1978) (Reaffirmed-2004)
Date of test	:	05-07-17

Test Results

Sl.no	Name of Test	Result	Requirements as per IS:73-2013
1	Penetration at 25°C , in 1/10th mm	**66**	60 to 70
2	Softening Point, °C	**50.8**	Min. 40°C
3	Ductility, cm	**94**	Min. 75cm
4	Flash point, °C	**224**	Min. 220°C
	Fire point, °C	**248**	

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CP/TF/01

TEST REPORT OF PRECAST COVER SLAB

Lab ID : **CP-2017-07-18-06** **Date: 22-07-17**

Customer : Assistant Executive Engineer, Vidyaranyaura Sub division, BBMP, Bangalore.

Address : Vidyaranyaura Sub division, BBMP, Bangalore.

Project Name : Improvements to road and drain and asphalting to Varadarajanagar main road in Ward no.11 (Kuvempunagara), in Vidyaranyapura Sub division.

Agency : Sri. T.N. Umashankar, No.9/2, 2nd cross , Papanna Block, Ganganagara, Bangalore-560032.

Customer's Reference : BBMP/EE/BTP/WO/88/2017-18

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 18-07-17

Sample ID No : 2017-07-18-06/02(a)

Sample Type /Size : Precast Cover Slab

Reference to BIS codes : IS: 516 - 1959 Methods of Tests for Strength of Concrete

Date of test : 18/07/2017

Sl. No.	Identification Mark	Diameter of the core	Height of the core	Weight of the core	Area	Failure Load	Core Compressive strength	Corrected Cylinder Compressive strength	Equivalent Cube Compressive strength
		(mm)	(mm)	(mm)	(Sq.mm)	(KN)	(N/mm^2)	(N/mm^2)	(N/mm^2)
1	Cover Slab-1	75.18	100.43	1.265	4438	75.9	17.1	15.9	19.9
2	Cover Slab-2	75.73	100.07	1.337	4503	72.3	16.1	14.9	18.7
3	Cover Slab-3	75.39	100.35	1.358	4463	72.5	16.2	15.1	18.9

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Quality Manager

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CP/TF/01

TEST REPORT OF PRECAST COVER SLAB

Lab ID	:	**CP-2017-07-18-06** **Date: 22-07-17**
Customer	:	Assistant Executive Engineer, Vidyaranyaura Sub division, BBMP, Bangalore.
Address	:	Vidyaranyaura Sub division, BBMP, Bangalore.
Project Name	:	Improvements to road and drain and asphalting to Varadarajanagar main road in Ward no.11 (Kuvempunagara), in Vidyaranyapura Sub division.
Agency	:	Sri. T.N. Umashankar, No.9/2, 2nd cross , Papanna Block, Ganganagara, Bangalore-560032.
Customer's Reference	:	BBMP/EE/BTP/WO/88/2017-18
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	18-07-17
Sample ID No	:	2017-07-18-06/02(b)
Sample Type /Size	:	Precast Cover Slab
Reference to BIS codes	:	IS: 516 - 1959 Methods of Tests for Strength of Concrete
Date of test	:	18/07/2017

Sl. No.	Identification Mark	Diameter of the core	Height of the core	Weight of the core	Area	Failure Load	Core Compressive strength	Corrected Cylinder Compressive strength	Equivalent Cube Compressive strength
		(mm)	(mm)	(mm)	(Sq.mm)	(KN)	(N/mm^2)	(N/mm^2)	(N/mm^2)
1	Cover Slab-1	100.51	230.48	2.164	7933	80.9	10.2	9.5	11.9
2	Cover Slab-2	100.49	231.52	2.148	7930	82.3	10.4	9.7	12.1
3	Cover Slab-3	100.37	230.51	2.166	7911	81.5	10.3	9.6	12.0

Note:

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CP/TF/01

TEST REPORT OF CEMENT CONCRETE KERB STONE

Lab ID	:	**CP-2017-07-18-06** **Date: 22-07-17**
Customer	:	Assistant Executive Engineer, Vidyaranyaura Sub division, BBMP, Bangalore.
Address	:	Vidyaranyaura Sub division, BBMP, Bangalore.
Project Name	:	Improvements to road and drain and asphalting to Varadarajanagar main road in Ward no.11 (Kuvempunagara), in Vidyaranyapura Sub division.
Agency	:	Sri. T.N. Umashankar, No.9/2, 2nd cross , Papanna Block, Ganganagara, Bangalore-560032.
Customer's Reference	:	BBMP/EE/BTP/WO/88/2017-18
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	18-07-17
Sample ID No	:	2017-07-18-06/03
Sample Type /Size	:	CC Kerb Stone/ 450*165*400mm
Reference to BIS codes	:	IS: 516 - 1959 Methods of Tests for Strength of Concrete
Date of test	:	18/07/2017

Sl. No.	Identification Mark	Diameter of the core	Height of the core	Weight of the core	Area	Failure Load	Core Compressive strength	Corrected Cylinder Compressive strength	Equivalent Cube Compressive strength
		(mm)	(mm)	Kg	(Sq.mm)	(KN)	(N/mm2)	(N/mm2)	(N/mm2)
1	A	100.01	165.51	2.864	7854	142.1	18.1	16.8	21.0
2	B	100.03	165.49	2.793	7857	145.2	18.5	18.5	23.1
3	C	100.01	165.50	2.815	7854	145.1	18.5	18.5	23.1

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TEST RESULTS OF GRADATION FOR WMM

Lab ID	:	**CP-RW-2017-08-22-02** **Date: 24-08-17**
Customer	:	Assistant Executive Engineer, Vidyaranyaura Sub division, BBMP, Bangalore.
Address	:	Vidyaranyaura Sub division, BBMP, Bangalore.
Project Name	:	Improvements to road and drain and asphalting to Varadarajanagar main road in Ward no.11 (Kuvempunagara), in Vidyaranyapura Sub division.
Agency	:	Sri. T.N. Umashankar, No.9/2, 2nd cross , Papanna Block, Ganganagara, Bangalore-560032.
Customer Reference	:	BBMP/EE/BTP/WO/88/2017-18
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	22-08-17
Sample ID No	:	2017-08-22-02/01
Type of Mix	:	WMM (Wet Mix Macadam)
Date of test	:	22-08-17
Oven Dry Weight	:	11000 Grams

IS Sieve Size(mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Spec.I.Vide Table 400.13 MORTH Specification
53	0	0	0.0	100.0	100
45	335	335	3.0	97.0	95-100
22.4	2259	2594	23.6	76.4	60-80
11.2	2171	4765	43.3	56.7	40-60
4.75	2258	7023	63.8	36.2	25-40
2.36	1602	8625	78.4	21.6	15-30
0.6	610	9235	84.0	16.0	8-22
0.075	1465	10700	97.3	2.7	0-5

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TEST REPORT OF AGGEGRATE IMPACT VALUE
IS: 2386 Part IV

Lab ID	:	**CP-RW-2017-08-22-02** **Date: 24-08-17**
Customer	:	Assistant Executive Engineer, Vidyaranyaura Sub division, BBMP, Bangalore.
Address	:	Vidyaranyaura Sub division, BBMP, Bangalore.
Project Name	:	Improvements to road and drain and asphalting to Varadarajanagar main road in Ward no.11 (Kuvempunagara), in Vidyaranyapura Sub division.
Agency	:	Sri. T.N. Umashankar, No.9/2, 2nd cross , Papanna Block, Ganganagara, Bangalore-560032.
Customer Reference	:	BBMP/EE/BTP/WO/88/2017-18
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	22-08-17
Sample ID No	:	2017-08-22-02/01
Type of Mix	:	Coarse Aggregate for WMM (Wet Mix Macadam)
Date of test	:	22-08-17

Sl.No	Particulars of observations	Index	TEST 1	TEST 2
1	Total weight of the surface dry sample sample (passing 12.5 mm and retained on 10mm sieve)	A	302.0	302.0
2	Weight of fraction passing 2.36mm sieve After giving 15 blows	B	69.4	71.2
3	weight of fraction retained 2.36mm sieve After giving 15 blows	C	232.2	230.3
4	Total weight of (B+C) is less than the initial weight (Weight A) by more than one gram the result shall be discarded and a fresh test made.	A-(B+C)	0.4	0.5
5	Aggregate impact value	(B/A)*100	23.0	23.6
6	Aggregate impact value (Mean of two tests)	Pecentage	23.3	

Note:-

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DETERMINATION OF FLAKINESS INDEX AND ELONGATION INDEX OF COARSE AGGREGATE(IS 2386 (Part 1) 1963 (RA 2007)

Lab ID	:	**CP-RW-2017-08-22-02** **Date: 24-08-17**
Customer	:	Assistant Executive Engineer, Vidyaranyaura Sub division, BBMP, Bangalore.
Address	:	Vidyaranyaura Sub division, BBMP, Bangalore.
Project Name	:	Improvements to road and drain and asphalting to Varadarajanagar main road in Ward no.11 (Kuvempunagara), in Vidyaranyapura Sub division.
Agency	:	Sri. T.N. Umashankar, No.9/2, 2nd cross , Papanna Block, Ganganagara, Bangalore-560032.
Customer Reference	:	BBMP/EE/BTP/WO/88/2017-18
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	22-08-17
Sample ID No	:	2017-08-22-02/01
Type of Mix	:	Coarse Aggregate for WMM (Wet Mix Macadam)
Date of test	:	22-08-17

Result:

Index	Percentage of Flakiness and Elongation Index	Secified limits as per MORTH specification table 400-12
Flakiness Index	12.3%	Combined Flakiness & Elongation Index for WMM is Maximum 35%
Elongation Index	10.7%	
Combined Flakiness and Elongation Index for WMM	23.0%	

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TEST RESULTS OF GRADATION FOR BC
IS 2386 (Part 1) 1963 (RA 2007)

Lab ID	:	**CP-RW-2017-08-28-03** **Date: 30-08-17**
Customer	:	Assistant Executive Engineer, Vidyaranyaura Sub division, BBMP, Bangalore.
Address	:	Vidyaranyaura Sub division, BBMP, Bangalore.
Project Name	:	Improvements to road and drain and asphalting to Varadarajanagar main road in Ward no.11 (Kuvempunagara), in Vidyaranyapura Sub division.
Agency	:	Sri. T.N. Umashankar, No.9/2, 2nd cross , Papanna Block, Ganganagara, Bangalore-560032.
Customer Reference	:	BBMP/EE/BTP/WO/88/2017-18
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	28-08-17
Sample ID No	:	2017-08-28-03/01
Type of Mix	:	BC-Plant (Bituminous Concrete)
Date of test	:	28-08-17
Oven Dry Weight	:	5000 Grams

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-17(grading-2)
19	0	0	0.0	100.0	100
13.2	88	88	1.8	98.2	90-100
9.5	706	794	15.9	84.1	70-88
4.75	895	1689	33.8	66.2	53-71
2.36	584	2273	45.5	54.5	42-58
1.18	492	2765	55.3	44.7	34-48
0.6	509	3274	65.5	34.5	26-38
0.3	522	3796	75.9	24.1	18-28
0.15	458	4254	85.1	14.9	12-20
0.075	350	4604	92.1	7.9	4-10
PAN	396	5000	100	0.0	0

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PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR BITUMINOUS CONCRETE

Lab ID	:	**CP-RW-2017-08-28-03** **Date: 31-08-17**
Customer	:	Assistant Executive Engineer, Vidyaranyaura Sub division, BBMP, Bangalore.
Address	:	Vidyaranyaura Sub division, BBMP, Bangalore.
Project Name	:	Improvements to road and drain and asphalting to Varadarajanagar main road in Ward no.11 (Kuvempunagara), in Vidyaranyapura Sub division.
Agency	:	Sri. T.N. Umashankar, No.9/2, 2nd cross , Papanna Block, Ganganagara, Bangalore-560032.
Customer Reference	:	BBMP/EE/BTP/WO/88/2017-18
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	28-08-17
Sample ID No	:	2017-08-28-03/01
Type of Mix	:	BC (Bituminous Concrete)
Date of test	:	28-08-17

Table 500-16 : Physical Requirements fo Coarse Aggregate for Bituminous Concrete

Property	Test	Result	Specification	Method of Test
Partical Shape	Flakiness Index	12.2	Combined Flakiness & Elongation Index for BC is Maximum 35%	IS:2386 Part I
	Elongation Index	11.3		
Strength	Aggregate Impact Value	24.1	Maximum 24%	IS:2386 Part IV
Specific gravity	Specific gravity	2.61	Maximum 2.7	IS:2386 Part III
Water Absorption	Water Absorption	0.22	Maximum 2%	IS:2386 Part III

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TEST REPORT OF AGGEGRATE STRIPPING VALUE OF ROAD AGGRGATE (IS:6241)

Lab ID	:	**CP-RW-2017-08-28-03** **Date: 31-08-17**
Customer	:	Assistant Executive Engineer, Vidyaranyaura Sub division, BBMP, Bangalore.
Address	:	Vidyaranyaura Sub division, BBMP, Bangalore.
Project Name	:	Improvements to road and drain and asphalting to Varadarajanagar main road in Ward no.11 (Kuvempunagara), in Vidyaranyapura Sub division.
Agency	:	Sri. T.N. Umashankar, No.9/2, 2nd cross , Papanna Block, Ganganagara, Bangalore-560032.
Customer Reference	:	BBMP/EE/BTP/WO/88/2017-18
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	28-08-17
Sample ID No	:	2017-08-28-03/01
Type of Mix	:	BC(Bitumenous Concrete)
Date of test	:	28-08-17

Type of Binder	:	60/70
% of Binder Used	:	5.0%
Weight of Aggregate	:	200.0 gm
Weight of Binder	:	10.0 gm
Temperature of water bath	:	40°C

No of test	Retained Stripping Percentage	Stripping Percentage	Average Retained Stripping Percentage	Secified limits as per MORTH specification table 500-8
1	98.5	1.5	98.3	Minimum Retained Coating 95%
2	98.5	1.5		
3	98.0	2.0		

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TESTS RESULTS ON STABILITY OF MIX

Lab ID	:	**CP-RW-2017-08-28-03** **Date: 31-08-17**
Customer	:	Assistant Executive Engineer, Vidyaranyaura Sub division, BBMP, Bangalore.
Address	:	Vidyaranyaura Sub division, BBMP, Bangalore.
Project Name	:	Improvements to road and drain and asphalting to Varadarajanagar main road in Ward no.11 (Kuvempunagara), in Vidyaranyapura Sub division.
Agency	:	Sri. T.N. Umashankar, No.9/2, 2nd cross , Papanna Block, Ganganagara, Bangalore-560032.
Customer Reference	:	BBMP/EE/BTP/WO/88/2017-18
Source of Sample	:	Hot Mix Plant, Bangalore
Sample Condition	:	Satisfactory
Date of Receipt	:	28-08-17
Sample ID No	:	2017-08-28-03/01
Type of Mix	:	BC (Bituminous Concrete)
Date of test	:	28-08-17

The results of the tests conducted on the Bituminous Concrete mix sample are as follow

Sl.No	Particulars of observations	TEST 1	TEST 2	Secified limits as per MORTH specification table 500-11
1	Marshal Stability at 60°C, KN	11.14	11.03	10KN(min)
2	Marshal flow at 60°C, mm	3.52	3.61	2-4
3	Percent air Voids	4.82	4.73	3-5
4	Percent Voids in mineral Aggregate(VMA %)	14.28	14.16	13-15
5	Percent Voids filled with Bitumen(VFB %)	71.87	70.63	65-75
6	Density, g/cc	2.25	2.26	–

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TEST RESULTS OF GRADATION FOR BC
IS 2386 (Part 1) 1963 (RA 2011)

Lab ID	:	**CP-RW-2017-08-31-01** **Date: 02-09-17**
Customer	:	Assistant Executive Engineer, Vidyaranyaura Sub division, BBMP, Bangalore.
Address	:	Vidyaranyaura Sub division, BBMP, Bangalore.
Project Name	:	Improvements to road and drain and asphalting to Varadarajanagar main road in Ward no.11 (Kuvempunagara), in Vidyaranyapura Sub division.
Agency	:	Sri. T.N. Umashankar, No.9/2, 2nd cross , Papanna Block, Ganganagara, Bangalore-560032.
Customer Referenc	:	BBMP/EE/BTP/WO/88/2017-18
Source of Sample	:	Sample supplied by Agency
Date of Receipt	:	31-08-17
Sample ID No	:	2017-08-31-01/01
Type of Mix	:	BC (Bituminous Concrete)
Date of test	:	31-08-17

Sl.no	Description	Index	Trail 1	Trail 2
1	Weight of the Sample	A	501	500
2	Weight of the sample After extraction	B	475	473
3	Bitumen percentage	$\frac{A-B}{A} \times 100$	5.19	5.40
4	Average percentage	%	5.3	

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Lab ID : **CP-RW-2017-08-31-01** **Date: 02-09-17**

Sample ID : **2017-08-31-01/01**

AFTER EXTRACTION - Trail-1

Total Weight of the Sample(gm) : 475

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-23(grading-2)
19	0	0	0.0	100.0	100
13.2	22	22	4.6	95.4	90-100
9.5	65	87	18.3	81.7	70-88
4.75	132	219	46.1	53.9	53-71
2.36	52	271	57.1	42.9	42-58
1.18	37	308	64.8	35.2	34-48
0.6	19	327	68.8	31.2	26-38
0.3	58	385	81.1	18.9	18-28
0.15	10	395	83.2	16.8	12-20
0.075	61	456	96.0	4.0	4-10

AFTER EXTRACTION - Trail-2

Total Weight of the Sample(gm) : 473

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-23(grading-2)
19	0	0	0.0	100.0	100
13.2	23	23	4.9	95.1	90-100
9.5	74	97	20.5	79.5	70-88
4.75	115	212	44.8	55.2	53-71
2.36	51	263	55.6	44.4	42-58
1.18	39	302	63.8	36.2	34-48
0.6	21	323	68.3	31.7	26-38
0.3	55	378	79.9	20.1	18-28
0.15	12	390	82.5	17.5	12-20
0.075	66	456	96.4	3.6	4-10

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